

CLAIMS

What is claimed is:

1. An electronic article surveillance antenna for generating an electromagnetic field to interrogate and detect electronic article surveillance markers, comprising:

a core formed by a plurality of amorphous alloy ribbons insulated from each other and stacked to form a substantially elongated solid rectangular shape; and,

5 a coil winding of wire disposed around at least a portion of said core, said coil winding of wire insulated from said core, said core and said coil winding being of a minimum size for generation of an electromagnetic field for interrogation and detection of electronic article surveillance markers.

2. The antenna of claim 1 wherein said core is about 75 centimeters long and about 2 centimeters wide comprised of about 60 amorphous alloy ribbons, each amorphous alloy ribbon about 23 microns thick stacked and laminated together forming said core.

3. The antenna of claim 1 wherein said coil winding of wire is 24-gauge wire with about 90 turns around said core.

4. The antenna of claim 1 wherein said core includes a central member about 50 centimeters long and about 2 centimeters wide comprised of about 25 amorphous alloy ribbons, each amorphous alloy ribbon about 23 microns thick stacked and laminated together forming said central core member, and a first outer member and a second outer member

5 disposed on opposite sides of said central member, each of said first outer member and said second outer member about 30 centimeters long and 2 centimeters wide comprised of about 15 amorphous alloy ribbons, each amorphous alloy ribbon about 23 microns thick stacked and laminated together forming said first outer layer and said second outer layer, respectively, said central core member and said first and said second outer members together
10 form said core.

5. The antenna of claim 1 further including an electronic controller connected to said coil winding of wire, said electronic controller comprising:

transmitter means for generating an electromagnetic field for transmission into an interrogation zone for reception by an electronic article surveillance marker, the

5 electronic article surveillance marker responding with a characteristic response signal;

receiver means for detecting the characteristic response signal from the electronic article surveillance marker; and,

switching means for switching said coil winding of wire between said transmitter means and said receiver means.

6. The antenna of claim 5 wherein said electronic controller operates in a pulsed mode, wherein said switching means sequentially switches between said transmitter means and said receiver means in preselected time periods.

7. A system for generating an electromagnetic field to interrogate and detect electronic article surveillance markers, comprising:

a plurality of electronic article surveillance antennas, each of said plurality of antennas including:

5 a core formed by a plurality of amorphous alloy ribbons insulated from each other and stacked to form a substantially elongated solid rectangular shape; and

a coil winding of wire disposed around at least a portion of said core, said coil winding of wire insulated from said core, said core and said coil winding being of a minimum size for generation of an electromagnetic field for interrogation and

10 detection of electronic article surveillance markers; and,
at least one electronic controller connected to said plurality of antennas, said electronic controller including:

transmitter means for generating an electromagnetic field for transmission into an interrogation zone for reception by an electronic article surveillance marker, the

15 electronic article surveillance marker responding with a characteristic response signal;

receiver means for detecting the characteristic response signal from the electronic article surveillance marker.

8. The system of claim 7 wherein a first of said plurality of electronic article surveillance antennas is selected by said electronic controller to operate in a transmit only mode and a second of said plurality of electronic article surveillance antennas is selected by said electronic controller to operate in a receive only mode.

9. The system of claim 7 wherein said electronic controller operates in a non-pulsed mode.

10. A system for generating an electromagnetic field to interrogate and detect electronic article surveillance markers, comprising:

a plurality of electronic article surveillance antennas, each of said plurality of antennas including:

- 5 a core formed by a plurality of amorphous alloy ribbons insulated from each other and stacked to form a substantially elongated solid rectangular shape; and
a coil winding of wire disposed around at least a portion of said core, said coil winding of wire insulated from said core, said core and said coil winding being of a minimum size for generation of an electromagnetic field for interrogation and
10 detection of electronic article surveillance markers; and,
at least one electronic controller connected to said plurality of antennas, said electronic controller including:

- transmitter means for generating an electromagnetic field for transmission into an interrogation zone for reception by an electronic article surveillance marker, the
15 electronic article surveillance marker responding with a characteristic response signal;
receiver means for detecting the characteristic response signal from the electronic article surveillance marker; and,
switching means for switching said antenna between said transmitter means and said receiver means.